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Abstract

There is scarce quantitative evidence on the well-being effects of separation and divorce, and the specific role of child support payments in Latin American countries, due to the paucity of longitudinal data. This article contributes to fill this gap by analyzing the impact of family breakdown and child support in Uruguay on a wide set of household and child outcomes, based on two waves of a longitudinal study (*Estudio Longitudinal del Bienestar en Uruguay*), that follows-up children that were first graders at public primary schools in 2004. We restrict our study to households composed by married or cohabiting couples in the baseline (2004). The effect is estimated using a combined difference in difference- PSM method. Our main findings show that separation entails a significant per capita household income loss (12%) and increases deprivation in terms of income poverty and access to durable goods, for custodial mothers. However, the income fall is partially mitigated by paternal child support payments, public transfers, changes in living arrangements and behavioral responses among mothers, whose labor earnings increase significantly after separation. Meanwhile, separation seems to worsen child educational outcomes, particularly grade repetition. However, this disadvantage vanishes for those children receiving transfers from non co-resident fathers.

Keywords: divorce, child support, Uruguay, panel data

JEL Classification: J12, J13, I30

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Separaciones, transferencias de padres no corresidentes y bienestar en Uruguay

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Resumen

Debido a la falta de estudios longitudinales específicos, existe muy poca información cuantitativa sobre los efectos de las separaciones y divorcios sobre el bienestar de los niños para los países de América Latina. Esta investigación aporta información en ese sentido, en base al análisis de los efectos de las separaciones y de las transferencias de padres no corresidentes sobre un conjunto de desempeños de los hogares, las madres y los niños. El trabajo se basa en información de dos olas del Estudio Longitudinal del Bienestar en Uruguay (ELBU), el cual sigue niños que cursaban el primer año escolar en escuelas públicas en 2004. A efectos de esta investigación, restringimos la muestra a los hogares que incluían parejas corresidentes en el año base (2004) y estimamos los efectos en base a la combinación de los métodos de *propensity score matching* (PSM) y diferencias en diferencias. Nuestros principales hallazgos indican que, para los hogares en los que las madres que permanecen a cargo de los niños, la separación implica una pérdida de ingresos significativa (12%) y aumenta la deprivación en términos de pobreza de ingresos y acceso a bienes durables. Sin embargo, la caída es parcialmente mitigada por el efecto de las transferencias de padres no corresidentes, las asignaciones familiares, los cambios en los arreglos familiares y las respuestas comportamentales de las madres. Estas últimas aumentan considerablemente sus ingresos laborales luego de la ruptura. Mientras tanto, la separación se asocia a un empeoramiento de los resultados educativos de los niños, en particular, en los relativos a la repetición. Sin embargo, esta desventaja desaparece para el subgrupo de niños que reciben transferencias de sus padres no corresidentes.

Palabras clave: divorcio, transferencias, bienestar, Uruguay

Código JEL: J12, J13, I30

Introduction

Household structures and families have experienced significant transformations in the last three decades worldwide, due to changing patterns in transitions to adulthood, couple formation and separation (Furstenberg, 2010). Many studies uncover a strong association among family arrangements and well-being and point out that final outcomes and well-being gains and losses arising from family change differ among mothers, children and fathers (Bartfeld, 2000).

Specifically, multidimensional deprivation is higher among households with children and particularly in lone parent nucleus (Kiernan and Smith, 2003). Available studies for developed countries highlight that most family breakdown consequences mainly occur in the short run, whereas they tend to compensate in the medium and long run (Mooney, Oliver and Smith, 2009). At the same time, gender trajectories after divorce are very different, with higher well-being losses among women who also are, in most cases, the custodial parent. In general, public transfers and maintenance arrangements do not offset post-divorce income losses.

In the developing world, due to the lack of suitable longitudinal information, there is scarce quantitative evidence on the effects of separation on standards of living and separation, and the specific role of child support payments. In order to contribute to fill this gap in the literature, the purpose of this study is to analyze the impact of family breakdown and child support in Uruguay on a wide set of household and child outcomes.

Having completed the first demographic transition in the early two decades of the XX century, Uruguay has been experiencing significant changes in family arrangements since the 1970s (Filgueira, 1996). The more salient feature of this evolution is cohabitation among young couples, which according to census data, grew from 20% in 1996 to 80% in 2011. At the same time, out of wedlock births accounted for 70% in 2010 (Cabella, Fernández and Prieto, 2015).

Although Uruguay was the first Latin American country to pass a divorce law (1907), the number of divorces increased only after 1990s, when separations among cohabiting couples also grew significantly. The last information available indicates that 35% of married couples were expected to split in the subsequent years (and that the proportion of children aged 0 to 18 cohabiting with both parents from is 60.6% whereas 35.9% lived with one parent (Cabella, Fernández and Prieto, 2015).

In regard to transfers from fathers who do not cohabit with their children, a previous study reports that, in 2001 and 2007, around 58% of fathers do not comply with child-support payments (Bucheli and Cabella, 2009; Bucheli and Vigorito, 2015). Although there has been some public debate on the prevailing legislation after the dissemination of these results, this topic has not been central in the policy agenda.

In this paper we assess the effect of separation and child support for custodial-mother families on a wide set of household, maternal and child outcomes, including household income, deprivation, access to durable goods, mother's labor force participation and income, child school attendance, repetition and leisure activities.

Our empirical exercise is based on data from *Estudio Longitudinal del Bienestar en Uruguay* (ELBU), a longitudinal study carried out by Universidad de la Republica. The sample is representative of children attending the first grade of primary public schools in 2004 and their families (85% of the cohort) in urban areas, which account for 87% of the Uruguayan population.

Specifically, we use data from the first wave (baseline), when children were 6 to 8 years old and, and from the third wave carried out in 2011/12 (follow-up) in which they were 12 to 13 years. 16% of the couples living together in 2004 split between waves. Within this group, 49% of custodial mothers received child support.

The main challenge for obtaining unbiased estimations of the effect of separation and child support on the outcomes of interest relies in the fact that the probability of separation and compliance with maintenance arrangements might be correlated to parental observable and unobservable characteristics. If the more deprived couples are more likely to split, a simple OLS regression analysis might produce biased estimators. To control for selection bias, we restrict our analysis to those children living with their two parents in the baseline, either married or not. Following Aasve, Mazzucco and Mecarini (2007), our identification strategy is based in propensity score matching methods to obtain comparable treatment (those couples that did not cohabit in the follow-up) and control groups (couples that still cohabited in the follow-up). On this basis, we carry out a combined PSM-diff in diff estimation (Heckman et al, 1997) and a robustness check based on a pure difference in difference analysis.

As ELBU follows children and custodial parents, one important caveat of this study is that it does not provide direct information on the evolution of the outcomes of interest among non- custodial parents, which are usually men. Besides, due to the time span between the baseline and the follow-up, the results presented in this paper reflect short and medium run outcomes; long run outcomes need to be assessed using further ELBU waves.

Our main findings show that separation entails for custodial mothers and children a significant per capita household income and wealth loss, and increases deprivation and the likelihood of being monetary poor. However, the income fall is partially mitigated by child support, public transfers, changes in living arrangements and behavioural responses that increase the earnings capacity among mothers. Considering the latter effects, the net income fall is around 12%. Meanwhile, separation worsens child educational outcomes, particularly in the case of repetition. Notwithstanding, this disadvantage vanishes among those households receiving child support.

The remainder of this paper is organized as follows. Section I presents a brief overview of the existing empirical literature on the effects of separation and child support on the outcomes of interest. Section II contains methodological details and provides a description of the database and variables used in this study. The main results are discussed in section III and section IV gathers some final comments.

I. The effects of separation on household, maternal and child outcomes

In what follows we present a brief review of two strands of the literature on the effects of separation. One is mainly focused on households and adults (i) and the other one is centered on children outcomes (ii). To conclude this section, we present a short overview of present regulations in Uruguay in regard to visits and alimonies regimes, as well as on access to public transfers directed to children (iii).

i) Household and maternal outcomes

Potential changes in socio-economic well-being of custodial families after separation arises from losses in economies of scale in expenditure, typically housing costs and other public goods; family wealth dissolution resulting from the division of commonly owned assets; and the fall in per capita household income due to the loss of an earner. The latter might be strengthened due to the labour market gender gap, as long as custodial parents are usually mothers and might not be compensated by his/her cash and in-kind transfers. At the same time, the potential loss of contact with the non custodial fathers might affect parenting quality and the psychological well-being of the children.

However, there are potential behavioral responses that make the situation more ambiguous and make more difficult to predict the final result. In order to compensate the loss in income and other economic resources, mothers might increase their labor supply, both at the extensive and intensive margin. At the same time, they might move to a smaller house or return to their origin household, integrating an extended household. Finally, if they remarry or engage in a new union, income losses might also be overcome. These movements might partially or completely outweigh the family breakdown income loss. As the happiness literature has highlighted, divorce is one of the drivers of reductions in life satisfaction (Clark, 2015). Thus, maternal subjective well-being and depression might be also at play, affecting earnings ability and parenting quality, particularly soon after separation or divorce.

As mentioned in the introduction, most empirical evidence comes from studies for developed countries, in which this topic and family change in general have been in the centre of the public policy debate and many long run longitudinal studies are available. Most research concludes that income losses after separation are bigger for women, particularly when they become the custodial parent (Mooney, Oliver and Smith, 2009).

Bartfeld (2000) indicates that in the case of the United States, 18 months after divorce, income losses range from 35 to 45% in the case of mothers and children, whereas they are almost negligible in the case of men. Further studies confirm these findings.

Manting and Bouman (2006) analyze the short and long run consequences of marital dissolutions in the Netherlands, based on a ten waves panel (1989-2000). Their findings show that income losses are higher for women than men, and for out of wedlock unions than for married couples. As labor market participation is low among women with children in the Netherlands, the consequences of separation are severe and difficult to revert.

In their analysis for the United Kingdom, Duncan and Hoffman (1985) find that in the case of women, post-separation income reductions are mainly overcome by remarrying rather than employment. Apparently, five years after divorce, female income levels are similar than before separation. Again, custodial parents present higher losses.

Jarvis and Jenkins (1999) conducted an analysis based on the first four waves (1991-1994) of the *British Household Panel Survey*, with similar results: women in charge of children are the ones that experience higher income reductions after separation. Whereas for men, the estimated income variation before and after separation is 4%, in the case of women income it represents 39% and descends to 77% for those with children. Interestingly, public transfers have a modest effect in reducing these differentials.

In regard to this later point, Burkhauser et al (1991) and Uunk (2004) find that, among European Union countries, the generosity and extension of the transfer system can make a relevant

difference on the costs of separation. Specifically, Scandinavian countries do best in compensating well-being losses.

Based on an identification strategy that combines propensity score matching and difference in difference estimations, Aasve et al (2007) analyze well-being losses based on the *European Community Household Panel*, with very similar findings to Uunk (2004). In contrast to the papers previously mentioned, they assess a wide set of outcomes and multidimensional well-being measures. They conclude that income is more sensitive to separation than multidimensional well-being. At the same time, differences among men and women are huge and significant when considering income, but disappear when analyzing non-monetary indicators. Based on the same identification strategy, Ongaro, Mazzuco and Meggiolaro (2009) find very similar results for the Italian case.

Another branch of the literature has assessed the role of father's transfers in compensating these losses. Most of the studies are based on direct comparisons, which cast some doubts on the results due to potential selection bias.

Drawing on data from the Current Population Survey Meyer and Hu (1999) find that parent alimonies and child support reduce poverty among custodial mothers in 7%, which represents a similar effect than the one of public transfers. Based on data from the *Survey of Income and Program Participation* for the years 1986-1991, Bartfeld (2000) estimates the effect of father's transfers on economic outcomes of mothers and children. These transfers represent approximately 29% of mothers' income (among the 54% that receive support) and reduce poverty in a range of 7 to 11 percent points. However, these effects do not overcome poverty and the gap in poverty rates among custodial and non-custodial parents remains significant (31-38% versus 9-13%). Related studies have also analyzed the effect of father's transfers on mother's labor market participation and work. Based on experimental data, Cuesta and Cancian (2015) find no effect of receiving child support on maternal labor effort.

Some studies have focused in the role of public transfers on overcoming post separation income losses. For instance, Cuesta and Meyer (2014) find that in the case of the United States receiving social assistance reduces poverty incidence in 32% among recipients. However, welfare reception might generate an unwanted effect in terms of maternal labor supply. Fischer (2015) analyzes the interplay among maintenance arrangements and public child support for the case of Australia, finding that policy design reduces eligibility for government transfers among households receiving child support.

The present review attest that there is scarce literature on these topics for the developing world. In the case of Uruguay, Bucheli and Vigorito (2015) analyzed the effect of separation on crowding, access to durable goods and household income. In line with Aasve et al (2007) they find a strong effect only in the case of income. This loss is not outweighed by other sources of income. However, the authors did not assess the specific role of parental or public transfers.

ii) Child outcomes

The determinants of child outcomes have been related to a wider scope of factors than just compliance with child support payments. In spite of acknowledging that family breakdown might be a difficult situation for children to cope with in the short run, the recent literature available for developed countries puts more weight on the strength of emotional ties, conflict and violence among parents and children, parenting styles and maternal mental health than on family structure *per se* (Mooney, Oliver and Smith, 2009).

In this vein, Amato and Gilbreth (1999) conduct a meta-analysis on the effect of parental transfers, frequency of contacts and parenting styles on child well-being based on 63 studies. They find a positive association among parental transfers and their outcomes of interest, which refer to academic achievements and lack of internalizing problems. Besides considering frequency of contacts and visits, they also assess varied dimensions of parenting styles, finding that authoritative parenting was the most robust predictor of child outcomes. Specifically, closeness has a positive effect on children's educational achievements.

Mooney, Oliver and Smith (2009) also review the empirical research assessing the effects of family breakdown on a broader set of dimensions of child well-being including health, alcohol use and problems with relationships. They stress the effect of parental conflict, parenting styles and maternal mental health, on these outcomes, both in intact and non-intact households. In the case of family breakdown, the instability associated to financial hardship and moving is also found to have a negative impact on child outcomes.

A group of studies have focused on the effect on post divorce/separation arrangements among parents and their effect on child outcomes finding that joint custody and more frequent contact has a positive effect (Amato, 2000; Amato, 2011). In a recent study for Denmark, Rasmussen and Stratton (2016) analyze the effect of contact and distance with non-resident parents on psychological, criminal and educational outcomes. Based on an instrumental variables strategy, they don't find these variables affect their outcomes of interest.

The available studies exploring the effects of separation and parental transfers on child well-being in Latin America, lack of an identification strategy controlling for potential selection biases on family structure.

iii) Maintenance arrangements, visits regulations and child benefits in Uruguay

According to the existing law, when couples divorce or separate, they must agree upon a child support and visits regime. If an agreement is not reached, the court fixes a schedule. Non-compliance with these conditions constitutes grounds for legal action. However, the legal system has little power to enforce agreements and court decisions. In 2000s, the diffusion of survey data on the extent of non-compliance (58% of fathers failed to make child-support payments) gave rise to of public debate about the prevailing legislation governing child support (Bucheli and Cabella, 2009). However, the topic has not been central in the policy agenda.

In regard to public transfers to households with children, Uruguay has expanded significantly the non-contributory strand of the social protection system in the last decade. Households with children aged 0 to 18 are entitled to receive *Asignaciones Familiares*, which is a cash transfer program targeted to the vulnerable population. Program entrance is based both on a means and proxy-means test based on a linear combination of household characteristics (Amarante et al, 2008). At present, almost 40% of households with children receive this transfer, which is conditional on school attendance for children aged 5 or more. As the first entrance threshold is a means test based on per capita income, lone parent households are more likely to become program beneficiaries.

II. Methodology

i) Empirical strategy

If separation episodes were randomly distributed among the population, a direct comparison among those who separated and those who remained cohabiting would yield to unbiased estimations of the effects of family dissolution on the outcomes of interest. However, previous work attests that those couples more prone to separate are different in a set of observable and unobservable features to those that remain together (Aasve et al, 2007). For instance, it might be that those women that economically depend from their husbands to a larger extent are less likely to separate. Thus, biases might arise from differences in observable and unobservable variables (Heckman, 1998).

To sort out this problem, Aasve et al (2007) combine propensity score matching (PSM) and difference in difference estimations based on the proposal by Heckman et al (1997). In this setting, an individual i might face two potential outcomes: Y_{0i} if she remains cohabiting (control) and Y_{1i} if she does not (treated). Ideally, the causal effect of separation/divorce (D) will be the difference among the two states. However, as it has been widely pointed out in the evaluation literature, the two outcomes are not observable for the same individual at the same moment.

Hence, the main idea is to compare intact and separated couples conditional on a set of pre divorce/split observable variables (Rosenbaum and Rubin 1983; Imbens, 2004). This implies that there exists a vector of covariates X , that make treatment random, once controlled for:

$$(Y_{1i}, Y_{0i}) \perp D_i | X_i$$

Then,

$$(Y_{1i}, Y_{0i}) \perp D_i | p(X_i) \quad (1)$$

where $p(X_i)$ is the propensity score defined as $E(D_i|X_i)=P(D_i=1|X_i)$. Hence, observations with identical propensity score present the same distribution in the set of covariates X_i . Under the mean independence assumption, Average Treatment Effect on the Treated (ATET) can be written in the following way:

$$ATET = E(Y_{1i} - Y_{0i} | D_i = 1) \quad (2)$$

$$= E(X/D = 1 \{E(Y_{1i} | X_i, D_i = 1)\} - E(X/D = 1 \{E(Y_{10} | X_i, D_i = 0)\}) \quad (3)$$

The propensity score theorem states that $P(D_i=1|Y_{ji}, p(X_i))$ does not depend on Y_{ji} , for $j=0, 1$. Under this assumption:

$$ATET = E(\{E(Y_i | p(X_i), D_i = 1)\} - \{E(Y_i | p(X_i), D_i = 0)\} / D_i = 1) \quad (4)$$

Usually, the estimation is carried out in two steps. First, the $p(X_i)$ is estimated based on a binary model and then, the effect is computed by matching or weighting observations (Dehejia and Wahba, 1999; Imbens, 2004).

Traditional PSM allows for cross-sectional comparisons. However, Heckman et al (1997) expands this analysis to longitudinal data, combining the PSM with a difference in difference estimation. As it is widely known, PSM has the draw-back of not considering unobservables. This procedure,

however, assumes that unobservables are unchanged through time. In this case, one of the main criticisms on PSM is partially overcome. The estimated equation is as follows:

$$DD = E(Y_{1i}^{t+1} - Y_{1i}^t) - E(Y_{0i}^{t+1} - Y_{0i}^t) \quad (5)$$

If couple dissolution generates time varying changes in unobservable variables, the DD estimator will be biased. Unfortunately, the data set lacks of a suitable instrumental variable to overcome this potential caveat.

To carry out the estimation, we implement the nearest matching neighbor, which consists of matching every treated unit with the closest control unit according to PSM (Leuven and Sianesi, 2013).

We follow an analogous strategy to study the effect of child support, restricting the sample to mothers that separated between waves. We also test the effects of child support payments by comparing cohabiting parents to separated mothers who receive child support in the follow-up survey.

ii) Data

The analysis presented in this chapter is based on two waves of the longitudinal study *Estudio Longitudinal del Bienestar en Uruguay*, that was started in 2004 and has been carried out by *Instituto de Economía (Universidad de la República)* to accomplish multidimensional well-being assessments.¹ The survey questionnaire collected information on housing characteristics, income, labor force participation and education of all household members, health data for the reference child at school (including anthropometric measures) and a wide range of questions on well-being, attitudes and opinions from the adult in charge of the child.

The study follows a representative sample of households with children that were attending the first year of primary school at public institutions in Montevideo and urban areas in 2004. Eighty-five percent of the children living in these areas attended public schools in that year, so our analysis is representative of the cohort, although it is underestimating the richer income strata. The sampling frame of this survey was the 2002 Height Census undertaken in all public schools in Uruguay. To date, three waves (2004, 2006 and 2011/12) have been completed and the fieldwork of the fourth one is carried out at present.

This paper is based on the 2004 and 2011/12 waves. In the first wave, 3200 households were interviewed. Panel attrition is 30.08% and there are no substantial biases in the loss in terms of socio-economic characteristics, although the probability of finding elder household heads and households outside Montevideo was slightly higher. (Failache, Salas and Vigorito, 2016).²

The 2004 wave records 1282 married or cohabiting couples. We restrict our analysis to this group and consider that a couple split between 2004 and 2011/12 if the interviewee declared that the child's parents did not live together in 2011/12. Among this group of households, we discard those cases in which the child was not living with her mother and the cases in which the father was dead in 2011/12. Thus, in this study we include the 1220 couples that meet our selection criteria. Among them, 212 split between the two waves and, within this group, 104 households received child

¹ Information on this data-set, survey questionnaires and micro-data can be found at <http://www.fcea.edu.uy/estudio-del-bienestar-multidimensional-en-uruguay.html>

² We do not include the estimations in this paper due to space constraints, but they are available on request to the authors.

support. Considering sample weights, 16% of couples split and among separated women, 49.4% received child support.

Table 1. Sample characteristics. Means and standard deviations in parentheses for each wave

Variable	All couples	Sub-groups in the common support		
		Married or cohabiting 2011/12	Separated in 2011/12: not receiving support	Separated in 2011/12 receiving child support
Age 2004	34.1 (6.766)	34.4 (6.877)	32.3 (6.000)	32.9 (6.234)
Age 2011/12	41.4 (6.789)	41.6 (6.858)	39.9 (6.599)	40.3 (6.356)
Household income (log)				
2004	7.81 (1.029)	7.85 (0.992)	7.54 (0.872)	7.85 (1.312)
2011/12	8.46 (0.840)	8.51 (0.839)	8.03 (0.696)	8.40 (0.898)
Household income net of public transfers (log)				
2004	7.53 (1.800)	7.59 (1.719)	7.29 (1.533)	7.51 (2.131)
2011/12	8.26 (1.377)	8.33 (1.348)	7.68 (1.379)	8.09 (1.727)
Mother's autonomous income (log)				
2004	3.63 (3.569)	3.64 (3.567)	3.58 (3.414)	3.56 (3.748)
2011/12	5.37 (3.521)	5.13 (3.582)	6.14 (2.969)	7.04 (2.736)
Mother's employment rate				
2004	0.58 (0.493)	0.58 (0.494)	0.60 (0.493)	0.57 (0.498)
2011/12	0.69 (0.465)	0.67 (0.470)	0.76 (0.426)	0.74 (0.440)
Assets index				
2004	2.72 (1.720)	2.77 (1.725)	1.91 (1.352)	2.84 (1.838)
2011/12	3.87 (1.849)	4.04 (1.811)	2.44 (1.641)	3.59 (1.701)
Income poverty (incidence)				
2004	0.78 (0.416)	0.77 (0.422)	0.88 (0.324)	0.73 (0.445)
2011/12	0.54 (0.499)	0.50 (0.500)	0.81 (0.391)	0.57 (0.498)

Source: own elaboration based on ELBU

Table 1 depicts the main characteristics of all couples and those in the common PSM support. Among the latter, baseline characteristics are not statistically different. However, as it can be noticed in the 2011/12 data, trajectories vary.

iii) Variables

- *Separation.* We consider a couple to be separated if its members do not live together in 2011/12. On this basis, we created a binary variable that takes the value 1 if the couple split and 0 otherwise. By definition, all observations belonging to the subsample used in this study have value 0 in 2004.
- *Child support.* The 2011/12 questionnaire includes a question for those cases in which parents do not live together that gathers information on whether the non cohabiting parent contributes to the support of the child and the frequency of these payments. We built a variable that takes the value 1 if the non corresident father complies with child support payments despite its frequency, and 0 otherwise.

Unfortunately, the survey does not gather information on the year of couple split, so we are not able to control for time since the separation. Hence, the observed effects might be short or medium run ones.

We study a wide set of household, maternal and child well-being indicators. In the first group we include:

- *Household income.* In both waves all household members monthly income is collected by source (labor earnings, pensions, capital income, housing imputed rent). We add up this information for each household and deflate it using the Consumer Price Index. The final dependent variable is expressed in logarithms.
- *Household income before public transfers.* We subtract public transfers from household income, and use a logarithmic transformation.
- *Assets index.* Composite durable goods index based on the methodology proposed by Filmer and Pritchett (2000). The list of goods and weights is included in Appendix 1. For the two waves, weights correspond to the 2011/12 estimation.
- *Deprivation index.* It is a relative index based on the command over the durable goods included in the assets index. The index is a weighted sum of variables that take value 1 when a household does not have access to a certain good. Weights are inversely correlated with the prevalence of the good among population, and vary for each year. Thus, a household is more deprived if it lacks of an asset that is more frequent in the year in which the data were collected. The index is normalized in the interval 0 -1.
- *Income poverty.* Poverty is defined according to the national threshold (INE, 2007). The variable takes value 1 when household income is below the poverty line (poor) and 0 otherwise.

Among maternal outcomes we consider:

- *Mother's income before public transfers.* It is the log of the deflated income (net of public transfers) generated by mothers.
- *Mother's autonomous income.* It corresponds to maternal income net of public and private transfers, i.e., it equalizes to the sum of labor earnings, contributory pensions and capital income (deflated and in logs).
- *Mother's labour income.* It is deflated and in logs.
- *Mother's employment status.* It takes value 1 when the mother is employed and 0 otherwise.

- *Mother's hours of work.* It is the log of worked hours in all jobs during the week before the interview; it takes value 0 when she reports no work.

In regard to the child, we assess education related outcomes and leisure activities:

- *School attendance.* It takes value 1 when the child attends school and 0 otherwise.
- *Grade repetition.* We use two different variables. One reflects the number of times that the child repeated one year of school; the other is a binary variable that takes value 1 when the child repeated at least once and 0 otherwise.
- *Time devoted to study and extracurricular activities.* It comprises time allocated to study and to extracurricular activities, except computation studies and sport. In 2011/12 it includes homework (expressed in hours during the week before the interview).
- *Time spent reading.* In 2004 it also includes time spent on listening to read out stories. (expressed in hours during the week before the interview).
- *Time spent playing sports.* Expressed in hours during the week before the interview.
- *Time spent using a computer.* It includes time devoted to play in 2004 and devoted to play and study in 2011/12 (expressed in hours during the week before the interview).
- *Time spent watching TV.* Expressed in hours during the week before the interview.

To operationalize the matching procedure stated in equation (1) we use the following variables for the baseline year (2004):

- *Mother's age.* Age of the mother in years.
- *Married.* Dummy variable that takes value 1 when children's parents were married in 2004 and 0 if they cohabited but were not married.
- *Mother's years of schooling.* Number of years completed in the educational system by the mother.
- *Father's years of schooling.* Number of years completed in the educational system by the father.
- *Religion.* Binary variable that takes value 1 when at least one member of the household took part in religious activities during the last year and 0 otherwise.
- *Mother's age at first child.* Age of the mother when she had her first child.
- *Assets index.* As mentioned, it is a composite durable goods index. In this estimation weights for 2004 were used (see Appendix 1).
- *Mother's employment status.*
- *Geographic region.* Set of binary variables reflecting the 8 regions included in the sample.

For the D-D estimation (equations 2 and 3), the control variables included in vector X are:

- *Mother's age.* Included only in the estimations of household and maternal outcomes.
- *Extended household.* Takes value 0 when the household is composed by children and parent/mother and value 1 when there is a household member that has another relationship with the child.
- *Repartnered.* It takes value 1 when the mother lives with a new partner (married or not) in 2011/12 and 0 in other case. It was included only in the estimations that compare the effect of alimonies among the subsample of separated mothers.
- *Child's age.* It is included only in the estimations of children outcomes.

III. Main results

In what follows, we first describe the results of the propensity score estimation (i) in order to single out the characteristics and biases associated to separation and compliance with child support. After that, we present and discuss the effects related to household and maternal well-being (ii) and child outcomes (iii).

i) Factors associated to separation and compliance with child support

Table 2 depicts probit models estimates used to build the propensity score. As examined below, the three specifications detect differences in household and maternal characteristics, among those who split and receive transfers from non corresident parents, that justify restricting the sample to those cases belonging to a common support.

Column (1) depicts the coefficients that refer to the probability of separation. As couple split is a generalized phenomenon, scarce variables are significantly different from zero at standard confidence levels. In those cases, signs are consistent with international evidence. Variables reflecting religiosity and marriage are negatively associated to separation. Besides, the likelihood of separation decreases with the age at first child and it is lower for women who were out of the labor force in the baseline.

Column (2) contains the estimation results for the probability of receiving child support, conditional on having experienced separation between the two waves. Once again, findings are in line with evidence presented in other studies. The likelihood of receiving child support increases with maternal education and wealth (measured by the assets index). Positive effects may be interpreted as reflecting a higher degree of empowerment among the women in this group, which would make them more prone to better post separation agreements or to enforce agreements or court decisions about child support. It is also if that mothers education and wealth are correlated with non-custodial fathers' income and command over economic resources. However, we find that men's education is not significant, though positive. Interestingly, non-employed women (either unemployed or out of the labor force) are more prone to receive child support. Having been married (compared to cohabitation) and religiosity present a positive sign as expected, but the coefficients are not statistically significant, as it is the case of the remaining potential explanatory variables.

Column (3) reports the estimated coefficients of a probit model that compares separated women who receive child support and married (or cohabiting) women. Once again, most of the explanatory variables are not statistically significant at usual confidence levels. Indeed, only two variables are relevant. One of them is women's education. Recall that this variable is not relevant to explain separation but, given separation, the likelihood of receiving child support increases with schooling. In the estimation of column (3), the number years of schooling exhibits a positive sign. The other significant variable is age at first child. According to column (1) separated women were younger when they had their first child than married women; this result also holds when we restrict the sample of separated women to the ones who receive transfers from non corresident fathers.

Table 2. Probit model on probability of undergoing separation and probability of receiving child support (standard errors in parentheses)

Variables	(1)	(2)	(3)
Age	-0.00257 (0.00800)	-0.0311 (0.0191)	-0.00848 (0.00984)
Married	-0.226 (0.108)**	0.153 (0.229)	-0.158 (0.134)
Mother's years of schooling	0.0277 (0.0173)	0.0851 (0.0427)**	0.0463 (0.0197)**
Father's years of schooling	0.0125 (0.0178)	0.0234 (0.0422)	0.0235 (0.0222)
Religion	-0.386 (0.155)**	0.108 (0.364)	-0.294 (0.189)
Mother's age at first child	-0.0504 (0.0141)***	0.0242 (0.0306)	-0.0391 (0.0166)**
Assets index	-0.0465 (0.0447)	0.242 (0.107)**	0.0150 (0.0532)
Unemployed (mother)	-0.0674 (0.171)	0.919 (0.357)**	0.236 (0.202)
Out of labor force (mother)	-0.214 (0.114)*	0.570 (0.258)**	-0.00131 (0.138)
Constant	0.291 (0.309)	-1.298 (0.738)*	-0.695 (0.376)*
Observations	1,220	199	1,118

Source: own elaboration based on ELBU

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(1) Sample: all women. The dependent variable takes value 1 when the couple split between 2004 and 2011/12 and 0 when it did not.

(2) Sample: women whose couple split between 2004 and 2011/12. The dependent variable takes value 1 when the father pays child support and 0 when he does not.

(3) Sample: women whose couple split between 2004 and 2011/12 and receive child support and women whose couple does not split. The dependent variable takes value 1 for the former and 0 for the latter.

In all cases the independent variables take their values of 2004. We also control by region using 7 dummy variables

ii) Well-being and maternal outcomes

In Table 3 we report the estimated effects of separation and child support on household outcomes based on the PMS D-D estimations. We first report the effect of separation (columns 1 and 2). In columns (3) and (4) we show the effect of child support given that separation took place. In columns (5) and (6) we compare the cases in which separation took place and non-custodial fathers pay child support with the cases in which parents remain together.

In line with the international literature, disposable per capita household income worsens after union dissolution (columns 1 and 2), falling around 12%, and child support does not outweigh this loss (columns 3 and 4). Separation yields to a well-being reduction also when considering an assets index, a relative deprivation index and the official (absolute) poverty line. In the first and latter case, losses are significant. For instance, despite income variations commented before,

poverty increases 14%. We do not find significant differences among separated women, indicating that child support does not mitigate the loss in terms of poverty, deprivation and wealth.

In Table 4 we analyze outcomes that enable to understand how households cope with the well-being reduction. We first subtract public transfers from household income, finding that household income excluding public transfers also declines after separation, but the magnitude of the income loss is bigger (around 25%). This result suggests that social assistance payments contribute to mitigate income reduction stemmed from separation.

Pre-public transfers income includes resources provided by all family members, and may be the result of changes in living arrangements eventually induced by separation. This is, for example, the case of a divorced woman who remarries or moves back with her parents. To partially isolate this effect, we consider mother's income before public transfers. We find a strong and positive effect that suggests that women undertake some counteracting strategies to face income loss stemmed from union split. The estimates reported in columns 3 to 6 suggest that separated women who receive child support do better pursuing these strategies than the ones who do not.

Table 3. Effect of separation and receiving alimonies on well-being (standard errors in parentheses)

	(1)	(2)	(3)
	PSM D-D	PSM D-D	PSM D-D
Household income	-0.129 (0.0706)*	0.0809 (0.137)	-0.0869 (0.0977)
Assets index	-0.545 (0.107)***	0.168 (0.205)	-0.461 (0.144)***
Deprivation index	0.0330 (0.0128)***	-0.0162 (0.0264)	0.0247 (0.0171)
Income poverty (yes=1)	0.149 (0.0390)***	-0.0963 (0.0622)	0.0995 (0.0542)*

Source: own elaboration based on ELBU

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(1) Sample: all women. The dependent variable takes value 1 when the couple split between 2004 and 2011/12 and 0 when it did not.

(2) Sample: women whose couple split between 2004 and 2011/12. The dependent variable takes value 1 when the father pays child support and 0 when he does not.

(3) Sample: women whose couple split between 2004 and 2011/12 and receive child support and women whose couple does not split. The dependent variable takes value 1 for the former and 0 for the latter.

In all cases the independent variables take their values of 2004. We also control by region using seven dummy variables

Note that in this case, mother's income still includes private transfers, that is, child support among others. Thus, we subtract private transfers to analyze whether they explain the positive effect. We find that the magnitude of the effect of separation on autonomous income slightly decreases, although it is still huge. In sum, although a small proportion of the positive effect of separation on women's income can be attributed to private transfers, other explanatory factors are at play. When analyzing separated women, a similar conclusion arises: income of mothers receiving child support increases when compared to mothers who do not, partly due to private transfers, although there are other intervening factors at play.

To explore the causes underlying these positive effects, we analyze labor force outcomes among women, considering earnings, employment status and hours of work. We find positive effects of separation on these variables, suggesting that entering the labor force and/or spending more time on labor market is a way to cope with the income loss. Hourly earnings increased for the whole group of mothers and for those that were already at the labor force in the baseline, suggesting that the positive effect on maternal income resulted both from an increase in the extensive and intensive margin (employment and hours of work), and from a higher average wage rate. The causes underlying this result need to be further investigated. Notice that this behavioral response is similar for women who receive child support and for those who do not.

Table 4. Effect of separation and receiving alimonies on well-being (standard errors in parentheses)

	(1)	(2)	(3)
	PSM D-D	PSM D-D	PSM D-D
Household income before public transfers	-0.250 (0.140)*	0.209 (0.270)	-0.142 (0.193)
Mother's income before public transfers	1.616 (0.314)***	1.236 (0.561)**	2.256 (0.436)***
Mother's autonomous income	1.538 (0.313)***	1.099 (0.546)**	2.107 (0.435)***
Mother's monthly labor income	0.843 (0.312)***	0.243 (0.578)	0.969 (0.433)**
Mother employment (yes=1)	0.0788 (0.0416)*	0.00859 (0.0784)	0.0832 (0.0572)
Mother's hours of work	0.351 (0.147)**	0.0986 (0.289)	0.401 (0.200)**
Mother's hourly labor income	0.550 (0.171)***	-0.00633 (0.326)	0.546 (0.236)**
Mother's monthly labor income (conditional on being employed in 2004)	0.443 (0.231)*	-0.270 (0.426)	0.333 (0.325)

Source: own elaboration based on ELBU

*** p<0.01, ** p<0.05, * p<0.1

(1) Sample: all women. The dependent variable takes value 1 when the couple split between 2004 and 2011/12 and 0 when it did not.

(2) Sample: women whose couple split between 2004 and 2011/12. The dependent variable takes value 1 when the father pays child support and 0 when he does not.

(3) Sample: women whose couple split between 2004 and 2011/12 and receive child support and women whose couple does not split. The dependent variable takes value 1 for the former and 0 for the latter.

In all cases, the independent variables take their values of 2004. We also control by region using 7 dummy variables

iii) Children outcomes

The estimated effects of separation and child support on children outcomes are reported in Table 4. Unfortunately, we lack of information on relevant potential explanatory channels such as parenting and the relation among parents before, during and after family breakdown.

The overall results suggest that there is a negative effect of separation on education related outcomes. Apparently, separation makes children to be more prone to grade repetition (columns

1 and 2) of around 30%. A mediating factor might be the loss in income and command over assets assessed in the previous section, which might create a worse and more unstable environment. The negative effect on grade repetition reported in columns 3 and 4 indicates that children who receive child support from non-custodial fathers do better than children who do not. As reviewed in section I, this positive association is found for developed countries and is explained by the positive relation between fathers' transfers and parenting styles. We expected a non-significant estimator in columns 5 and 6, that is, the estimated difference between the cases in which there is separation and child support, and the cases in which the union there is not separation. But unexpectedly, we find that children of split couples receiving child support do better than children of non-split couples. A plausible explanation is that positive parenting styles are well-represented by the former whereas children of non-split couples are subject to more heterogeneity in dimensions such as authoritative practices, emotional ties, conflict or domestic violence.

Consistently with previous findings, time spent studying outside the classroom decreases for children of separated couples. Once again, among children separated parents, time allocated to study is higher when non-custodial fathers fulfill their obligations related to child support. For this outcome, we do not find significant differences in columns 5 and 6.

Finally, we do not find robust results related to time devoted to leisure activities. One possible exception is time spent playing sports. Though it merits a deeper analysis, probably fathers are more involved in this activity than mothers because of cultural and social norms tradition. Thus, we may cautiously interpret that separation would make weaken time allocation to sport practicing.

Table 4. Effect of separation and receiving alimonies on educational outcomes and leisure time (standard errors in parentheses)

	(1)	(2)	(3)
School attendance (yes=1)	-0.0370 (0.0203)*	0.00475 (0.0438)	-0.0345 (0.0274)
Grade repetition (number of times)	0.300 (0.0562)***	-0.324 (0.128)**	0.135 (0.0749)*
Grade repetition (yes=1)	0.186 (0.0356)***	-0.185 (0.0740)**	0.0915 (0.0480)*
Time spent reading	-0.122 (0.470)	-0.222 (0.728)	-0.177 (0.640)
Time spent playing sports	-0.702 (0.377)*	-0.454 (0.807)	-0.933 (0.505)*
Time spent using a computer	0.323 (0.881)	0.161 (1.727)	0.406 (1.199)
Time spent studying outside the classroom	-1.192 (0.336)***	1.775 (0.752)**	-0.300 (0.435)
Time spent watching TV	-0.220 (1.121)	-4.088 (2.214)*	-2.343 (1.496)

Source: own elaboration based on ELBU*** p<0.01, ** p<0.05, * p<0.1

(1) Columns (1) and (2): estimated effect of separation.

(2) Columns (3) and (4): estimated effect of child support among separated.

(3) Columns (4) and (4): estimated difference between separated cases that receive child support and cases in which unions remains.

IV. Final comments

Based on a longitudinal study of children attending the first grade of public primary school in 2004, we assessed the effects of separation and child support in Uruguay, on a wide set of household, maternal and child outcomes. We first corroborate that although separation is widespread among Uruguayan couples, the probability of couple breakdown is higher among unmarried couples, nonreligious women and those who were already in the labor force while cohabiting. Meanwhile, it decreases with age at first child. Among separated women, those receiving child support are the more educated and wealthy ones and those who were out of the labor force when living together with their child's father. In order to take account of these potential biases we carry out a combined PSM-DD estimation to determine the causal effects of separation and child support payments on our outcomes of interest. This identification strategy is valid under the assumption that mothers did not experience changes in unobservables after divorce/separation. Although we cannot test this assumption with the present dataset, due to the lack of suitable information in the baseline data, in further work the inclusion of the fourth ELBU wave will allow to carry out these comparisons in regard to variations in attitudes and opinions.

It must be recalled that this exercise allowed us to investigate short and medium run effects of separations experienced when separation happened at school age. We are unable to assess the effect of separation in earlier life stages. Further waves of this panel will allow us to assess the long-run effects of parental separation in the outcome considered in this paper and differences in transitions to adulthood.

As attested by the international literature, our results convey that separation causes a significant erosion in the command over means and assets that is partially overcome by behavioral responses from mothers, as well as changes in living arrangements, child support and social assistance payments. The latter play a significant role halving the post separation income loss. The capacity of labor earnings generation of mothers is also substantially increased, posing questions on the reduction of their leisure time.

In regard to child outcomes, school attendance remains unchanged but the likelihood of repetition increases considerably (around 30%) whereas the time devoted to study outside the classroom decreases. Although we are not able to test mediators referring to parenting, depression among mothers and the relation among parents, the loss in material resources might be also at play. Among those children receiving child support the negative effects vanish and their performance outweighs those of children living with their two parents.

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Annex

Table A.1 Assets index: variables included and weights obtained from multiple correspondence analysis

Variable	Categories (has a ...)	Weights	
		Wave 1	Wave 2
Boiler	No	2.088	2.335
	Yes	-0.712	-0.589
Cooker	No	0.302	0.211
	Yes	-0.697	-0.378
Micro-wave oven	No	1.014	1.491
	Yes	-1.735	-1.155
Music equipment	No	1.292	0.971
	Yes	-0.592	-0.416
Dishwasher	No	0.069	0.052
	Yes	-2.671	-2.369
Clothes iron	No	1.592	1.543
	Yes	-0.618	-0.653
Vacuum cleaner	No	0.668	0.719
	Yes	-2.044	-1.699
Car	No	0.494	0.644
	Yes	-2.014	-1.762
Telephone (landline)	No	1.527	1.490
	Yes	-0.766	-0.917
Mobile telephone	No	1.530	1.057
	Yes	-0.441	-0.064
Video or DVD	No	1.231	1.305
	Yes	-1.063	-0.545
Refrigerator	No	2.685	3.171
	Yes	-0.242	-0.115
Washing machine	No	1.633	2.334
	Yes	-0.999	-0.675
TV	No	0.603	0.906
	Yes	-1.166	-1.049
Computer	No	0.774	1.704
	Yes	-1.929	-1.208
Internet connection	No	0.156	1.475
	Yes	-2.846	-1.428
Heater	No	1.192	1.024
	Yes	-0.986	-0.718
Inertia 1st Dim.		94.03	92.93

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